Amendments to the Claims

The following Listing of Claims will replace all prior versions and listings of claims in the application.

1. (Currently amended) An isolated nucleic acid molecule having antisense or RNA interference activity comprising a promoter that functions in a rice plant operably linked to:

(i) a nucleic acid sequence having at least 15 contiguous nucleotides complementary to a gene encoding a rice prolamin polypeptide, or

(ii) a nucleic acid sequence having at least 70% homology to (i),

wherein, when introduced into a rice cell expressing the prolamin polypeptide, the nucleic acid is effective for reducing the amount of expression of the prolamin polypeptide relative to a rice plant into which the nucleic acid was not introduced.

2. (Previously presented) The nucleic acid molecule according to claim 1 comprising said nucleic acid sequence having at least 15 contiguous nucleotides complementary to a gene encoding a prolamin polypeptide.

3. Canceled.

4. (Withdrawn) The nucleic acid molecule according to claim 1, wherein the prolamin is of japonica rice.

5. (Previously presented) The nucleic acid molecule according to claim 1, wherein the nucleic acid sequence having at least 15 contiguous nucleotides complementary to a gene encoding a prolamin polypeptide is at least 50 nucleotides in length.

6. (Previously presented) The nucleic acid molecule according to claim 1, wherein the nucleic acid sequence having at least 15 contiguous nucleotides complementary to a gene encoding a prolamin polypeptide comprises a full length sequence encoding the prolamin polypeptide.

7. (Previously presented) The nucleic acid molecule according to claim 1, wherein the nucleic acid sequence having at least 15 contiguous nucleotides complementary to a gene encoding a prolamin polypeptide is complementary to the sequence encoding the signal peptide of said prolamin.

8. (Previously presented) The nucleic acid molecule according to claim 1, wherein the at least 15 contiguous nucleotides complementary to a gene encoding a prolamin polypeptide is a polynucleotide of 50 nucleotides or less.

9. (Previously presented) The nucleic acid molecule according to claim 1, wherein the at least 15 contiguous nucleotides complementary to a gene encoding a prolamin polypeptide is a polynucleotide of 30 nucleotides or less.

10. Canceled.

11. (Previously presented) The nucleic acid molecule according to claim 1, wherein the prolamin is a 13 kDa prolamin.

12. (Previously presented) The nucleic acid molecule according to claim 1, wherein said nucleic acid sequence of at least 15 contiguous nucleotides is complementary to:

(a) a polynucleotide having a nucleic acid sequence set forth in a SEQ ID NO selected from the group consisting of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43 and 45, or a fragment sequence thereof;

(b) a polynucleotide encoding a polypeptide having an amino acid sequence set forth in a SEQ ID NO selected from the group consisting of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44 and 46, or a fragment sequence thereof;

(c) a polynucleotide encoding a polypeptide variant having at least one mutation selected from the group consisting of one or more amino acid substitution, addition and deletion in an amino acid sequence set forth in a SEQ ID NO selected from the group consisting of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44 and 46, and having a biological activity;

(d) a polynucleotide that is an allelic variant of a DNA consisting of a nucleic acid sequence set forth in a SEQ ID NO selected from the group consisting of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43 and 45;

(e) a polynucleotide encoding a species homolog or an ortholog of a polypeptide consisting of an amino acid sequence set forth in a SEQ ID NO selected from the group consisting of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44 and 46;

(f) a polynucleotide hybridizing to at least one polynucleotide of any of (a)-(e), and encoding a polypeptide having a biological activity; or

(g) a polynucleotide consisting of a base sequence having at least 70% identity with at least one polynucleotide of (a)-(e) or a complementary sequence thereof, and encoding a polypeptide having a biological activity.

Claims 13-15. Canceled.

16. (Previously presented) The nucleic acid molecule according to claim 1, wherein the nucleic acid molecule has RNA interference activity, and wherein said molecule further comprises a polynucleotide complementary to the nucleic acid sequence.

17 - 18. Canceled.

19. (Previously presented) The nucleic acid molecule according to claim 11, further comprising a spacer sequence.

20. (Previously presented) The nucleic acid molecule according to claim 19, wherein the spacer sequence comprises an intron sequence.

21. (Currently amended) The nucleic acid molecule according to claim 19, wherein the spacer sequence is between the nucleic acid sequence and the polynucleotide.

22. Canceled.

23. (Currently amended) A nucleic acid cassette comprising a nucleic acid sequence having antisense or RNA interference activity, comprising:

(i) a nucleic acid sequence having at least 15 contiguous nucleotides complementary to a gene encoding a rice prolamin polypeptide, or

(ii) a nucleic acid sequence having at least about 70% homology to (i),

wherein, when introduced into a rice cell expressing the prolamin polypeptide, the nucleic acid cassette is effective for reducing the amount of expression of the prolamin polypeptide relative to a rice plant into which the nucleic acid cassette was not introduced.

24. (Previously presented) The nucleic acid cassette according to claim 23, further comprising a promoter that functions in rice operably linked to a nucleic acid sequence encoding a foreign protein.

25. (Previously presented) The nucleic acid cassette according to claim 23, wherein said cassette has RNA interference activity, and wherein said cassette further comprises a polynucleotide complementary to the nucleic acid sequence.

26. (Previously presented) The nucleic acid cassette according to claim 25, further comprising a spacer sequence.

27. (Previously presented) The nucleic acid cassette according to claim 26, wherein the spacer sequence comprises an intron sequence.

28. (Previously presented) The nucleic acid cassette according to claim 26, wherein the spacer sequence is between the nucleic acid sequence and the polynucleotide.

29. (Previously presented) The nucleic acid cassette according to claim 24 or claim 25, further comprising a polynucleotide encoding a signal sequence fused, in frame, to the nucleic acid sequence encoding a foreign protein.

30. Canceled.

31. (Previously presented) The nucleic acid cassette according to claim 29, wherein the signal sequence is a signal sequence of a storage protein.

32. (Previously presented) The nucleic acid sequence according to claim 29, wherein the signal sequence is a prolamin signal sequence.

33. Canceled.

34. (Previously presented) The nucleic acid cassette according to claim 24, wherein the promoter sequence is operably linked to both the nucleic acid sequence encoding the foreign protein and the polynucleotide.

35. (Previously presented) The nucleic acid cassette according to claim 24, wherein separate promoters are independently operably linked to the nucleic acid sequence encoding the foreign protein and the polynucleotide.

36. (Previously presented) The nucleic acid cassette according to claim 35, wherein a first promoter sequence is operably linked to the nucleic acid sequence encoding the foreign

protein, and a second promoter sequence is operably linked to the polynucleotide, and the first and second promoter sequences are not the same.

37. (Previously presented) The nucleic acid cassette according to claim 36, wherein the second promoter sequence promotes expression in a high level in seeds.

38. (Previously presented) The nucleic acid cassette according to claim 36, wherein the second promoter sequence is derived from a storage protein promoter.

39. Canceled.

40. (Previously presented) The nucleic acid cassette according to claim 36 wherein the second promoter sequence is derived from a promoter selected from the group consisting of a polyubiquitin promoter, 26 kD globulin promoter, glutelin A promoter, glutelin B promoter, 16 kD prolamin promoter, 13 kD prolamin promoter and 10 kD prolamin promoter.

41. (Previously presented) The nucleic acid cassette according to claim 36 wherein the first promoter sequence is derived from a storage protein promoter.

42. (Currently amended) The nucleic acid cassette according to claim 36, wherein the first promoter sequence is a promoter sequence naturally associated with the polynucleotide~~nucleic acid sequence (B)~~.

43. (Previously presented) The nucleic acid cassette according to claim 36 wherein the first promoter sequence is derived from a promoter selected from the group consisting of 26 kD globulin promoter, glutelin A promoter, glutelin B promoter, 16 kD prolamin promoter, 13 kD prolamin promoter and 10 kD prolamin promoter.

44. (Previously presented) The nucleic acid cassette according to claim 36, wherein the first promoter sequence is a prolamin promoter.

45. (Previously presented) The nucleic acid cassette according to claim 36, wherein the first promoter sequence is derived from a prolamin promoter, and the second promoter sequence is derived from a promoter other than the prolamin promoter.

46. (Currently amended) The nucleic acid cassette according to claim 2433, comprising a polynucleotide encoding a signal sequence in frame between the nucleic acid encoding the foreign protein and the promoter sequence.

47. (Previously presented) The nucleic acid cassette according to claim 25 further comprising a terminator sequence.

48. (Previously presented) The nucleic acid cassette according to claim 47, wherein the terminator sequence is a terminator sequence of 10 kD prolamin.

49. (Previously presented) The nucleic acid cassette according to claim 25, further comprising a nucleic acid encoding a foreign protein located upstream of both the polynucleotide and the nucleic acid complementary to said polynucleotide.

50. (Previously presented) The nucleic acid cassette according to claim 49 comprising a spacer sequence between the polynucleotide and the nucleic acid complementary to said polynucleotide.

51. (Previously presented) The nucleic acid cassette according to claim 49 comprising an intron sequence between the polynucleotide and the nucleic acid complementary to said polynucleotide.

52. (Previously presented) A method for producing a transgenic rice plant comprising the steps of:

A) providing the nucleic acid cassette according to claim 23;

B) transforming a rice plant with the nucleic acid cassette; and

C) selecting a transformed rice plant having a reduced amount of protein in the seeds compared to an untransformed rice plant.

53. (Previously presented) A vector comprising the nucleic acid molecule according to claim 1.

54. Canceled.

55. (Previously presented) The vector according to claim 53, wherein the promoter is a storage protein promoter.

56. (Previously presented) The vector according to claim 53 wherein the promoter is a prolamin promoter.

57. (Previously presented) The vector according to claim 53, further comprising a terminator.

58. (Previously presented) The vector according to claim 53, further comprising a sequence encoding a selectable marker.

59. (Previously presented) The vector according to claim 53, further comprising a sequence encoding a foreign protein.

60. (Previously presented) A rice plant cell comprising the nucleic acid molecule according to claim 1.

61. (Previously presented) The plant cell according to claim 60, further comprising a nucleic acid molecule encoding a foreign protein.

62. Canceled.

63. (Previously presented) The rice plant cell according to claim 60 wherein the plant cell is from the same rice variety from which the prolamin is derived.

64. Canceled.

65. (Previously presented) The rice plant cell according to claim 60, wherein the cell is of a japonica rice and the prolamin is from a japonica rice.

66. (Previously presented) The rice plant cell according to claim 60, wherein the cell is homozygous for the nucleic acid molecule.

67. (Previously presented) A plant tissue comprising the plant cell according to claim 60.

68 - 76. Canceled.

77. (Previously presented) A starch preparation produced from the rice plant cell according to claim 60, wherein said starch preparation comprises said nucleic acid molecule.

78. (Previously presented) A composition comprising a plant tissue comprising the plant cell according to claim 61, wherein said plant cell comprises said foreign protein.

79. (Previously presented) A method for reducing the amount of protein in a seed of a rice plant, comprising the steps of:

A) introducing the nucleic acid molecule of claim 1 into a rice plant cell;

B) redifferentiating the cell to produce a transgenic rice plant; and

C) obtaining a seed from the transgenic rice plant.

80. (Previously presented) The method according to claim 79, wherein the step of introducing is performed by Agrobacterium-mediated transformation.

81. (Previously presented) The method according to claim 79, further comprising the step of D) selecting a plant cell with the nucleic acid introduced therein.

82. (Previously presented) The method according to claim 81, wherein the step of selecting is performed by determining resistance against an antibiotic.

83. (Previously presented) A method for expressing a foreign protein in a rice plant seed, comprising the steps of:

providing the nucleic acid molecule according to Claim 1;

providing a nucleic acid encoding the foreign protein;

introducing the nucleic acid molecule according to Claim 1 and the nucleic acid encoding the foreign protein into a cell of the rice plant;

redifferentiating the cell to produce a transgenic rice plant; and

obtaining a seed from the transgenic rice plant.

84. (Previously presented) The method according to claim 83, wherein the step of introducing is performed by Agrobacterium-mediated transformation.

85. (Previously presented) The method according to claim 83, further comprising the step of selecting a plant cell with the nucleic acid molecule introduced.

86. (Previously presented) The method according to claim 85, wherein the step of selecting is carried out by determining resistance of the plant cell against an antibiotic.

87. (Previously presented) The method according to claim 83, further comprising the step of separating the foreign protein from the seed.

88 - 91. Canceled.